

### ملخص الرسالة أو الأطروحة

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We used seventy adult male and twenty adult female rats . The present study was carried out in the animal house in the Collage of Pharmacy, University of Basrah, Iraq. The study divided into two experiments as following:

The First experiment: It aimed to investigate the effect of lycopene on some physiological and biochemical parameters in male rats treated with monosodium glutamate such as: body weight, antioxidant activity, blood parameters, biochemical parameters and some hormones as well as the histological study of liver, kidney, and the brain. We used Sixty adult male rats of 4th month age were divided randomly into six groups (10 rats in each) as follow: The First group (Control): rats were given 0.25ml of normal saline orally by oral gavage for 30 days. The Second group (G2): rats were given 0.25 ml of MSG (20 mg/kg BW) by oral gavage for 30 days. The Third group (G3): rats were given 0.25ml of MSG (20mg/kg BW) by gavage orally for 15 days and after that the animals given 0.25ml of lycopene (200mg/kg BW) by oral gavage for other 15 days. The Fourth group (G4): rats were given 0.25ml of lycopene (200mg/kg BW) by oral gavage for 15 days followed by 0.25ml MSG (20 mg/kg BW) given orally for another 15 days. The Fifth group (G5): rats were given 0.25ml of lycopene (100mg/kg BW) by oral gavage and after one hour the same animals had been given (0.25ml) of MSG (20 mg/kg BW) by oral gavage for 30 days. The sixth group (G6): rats were given 0.25ml of lycopene (200mg/kg) daily by oral gavage and after one hour the same animals had been given 0.25ml of MSG (20mg/kg BW) by gavage for 30 days. At the end of the first experiment, the animals, sacrificed and The blood sample collected for physiological and biochemical analysis, in addition to histological (the liver, kidney and brain) were examined histologically.

The results showed a significant decrease in body weight gain in groups treated with lycopene as compared with the control group and G2. Most blood parameters shown a significant increase in G2, while the groups which treated with lycopene showed a significant decrease as compared with the control and G2 groups. Most treated groups have a significant increase of liver enzymes and total protein also total bilirubin, creatinine, urea and uric acid. Regarding the lipid profile, all parameters (except high density lipoprotein) showed a significant increase in most treated groups, especially G2. Adrenocorticotrophic hormones showed a significant increase in most treated groups. On the contrary, in cortisol and Triiodothyronine. But Thyroxine showed a significant rise in G2 only. Regarding the antioxidant activity, the Glutathione peroxidase and Superoxide dismutase showed a significant decrease in the whole treated groups as compared with control. Whereas in malondialdehyde, showed a significant increase in G2 as compared with the control and other treated groups. Concerning the histopathologic study, sections of most treated groups has been affected.

The second experiment: The purpose of this experiment to isolate primary hippocampus and cortical neurons cells from prenatal pulps rat at age (E16-18) days of pregnant and to investigate the effect of MSG and lycopene on the cell viability of these cells, depending on dose and time of 7th days of incubation. The results showed a significant decrease cell viability in MSG treated neurons as compared with untreated cells in according time depended or time. While the lycopene treatment cell showed no significant differences as compared vehicle(dimethylallyl diphosphate) treated cells. Furthermore, to prove that isolated cells are neurons, we did Immunocytochemistry study and the results proved it.

